

- a Return Error component is received in the response message from the LNP SCP database,
- a Reject component is received in the response message from the LNP SCP database,
- a protocol error is detected in the response message received from the LNP SCP database.

In these cases the LRN field shall be filled with "Hexadecimal F". The Party Identifier should be set to indicate the "Terminating party", and the Supporting Information to indicate a LRN Source of "LNP Database" with a Query Failure indicator appropriate to the condition encountered. Both the Service Provider Identity and Location field shall be populated with "Hexadecimal F" in accordance with BAF fill procedures.

If the LNP module does not contain a valid LRN, then downstream billing system processing may have to do additional work to identify the service provider of an originating DN.

<End of REQ-1100>

<REQ-IL-GR-1110V1>

The LNP-database-supplied number portability information (e.g. LRN) shall be accepted by the switch and recorded in the LNP module without any validation or screening.

<End of REQ-1110>

<REQ-IL-GR-1120V1>

On a long duration call involving a ported DN(s), a LNP module(s) that is appended to the first call record shall also be appended to subsequent long duration "continuation" records made for that particular call.

<End of REQ-1120>

4.5.4.2.1.1 Appending the LNP Module at an Originating Switch

The originating switch has several scenarios to contend with regarding charge recordings. In general, calls to a ported number in which the originating switch launches a query will result in an LNP module to record the LNP information for the ported terminating DN.

Future scenarios will exist where a number originates a call and has Service Provider Identity or other number portability related data provisioned on its DN. This will result in an LNP module containing originating party information. It may be possible, once per-DN number portability data is provisioned in a switch; to have both originating and terminating LNP modules appended to an AMA record.

<REQ-IL-GR-1125V1.03>

An originating switch shall append an LNP module to all IC and INC exchange originating access AMA records generated by the switch for calls originating or redirected via a switch based supplemental service (e.g., call forwarding or call deflection) from ported DNs. The LNP module shall be populated with the LRN of the originating switch. If more than one LRN is assigned to the originating switch, the LRN which the originating switch signals in the ISUP JIP on outgoing SS7 calls shall be recorded. Additionally, the LNP module shall contain a Party Identifier set to "Originating party data", an LRN Source Indicator of the Supporting Information field set to "Switch data", and a Query Status Indicator of the Supporting Information field set to "no query done".

In the case of IC or INC exchange originating access AMA records generated following an AIN trigger that results in a change to the billed party number (i.e., initiates a separately billed call leg), the switch shall append an LNP module to all IC and INC exchange originating access AMA records generated by the switch. The LNP module shall be populated with the LRN of the originating switch.

If more than one LRN is assigned to the originating switch, the LRN which the originating switch signals in the ISUP JIP on outgoing SS7 calls shall be recorded. Additionally, the LNP module shall contain a Party Identifier set to "Originating party data", an LRN Source Indicator of the Supporting Information field set to "Switch data", and a Query Status Indicator of the Supporting Information field set to "no query done".

Known IC or INC originating exchange access AMA Call Codes are: CC038 Orig. Integrated Multiple Access Switch Service, CC110 Originating InterLATA Station Paid, CC111-CC114 InterLATA WATS, CC117 InterLATA CSDC, CC131 Originating FG-A, CC134 Originating FG-B, CC139 Carrier Identified CAMA InterLATA, CC141 IC Number Service Call, CC173 Private Virtual Network Non-SSP End Office, CC263 Originating access to IEC Virtual Network, and CC506 800 Calls from Public Stations at NON-SSP End Offices. Bellcore GR-1100-CORE, GR-1083-CORE, GR-1298-CORE, GR-1147-CORE, and GR-862-CORE should be consulted for a complete list of IC or INC exchange access AMA Call Codes.

<END of REQ-1125>

<REQ-IL-GR-1125BV1.03>

The following is an alternative to the previous requirement REQ-1125. It is for consideration ONLY if REQ-1125, which specifies generation of the LNP module only for calls originating from ported DNs, can not be provided in the 2Q97 time-frame. This alternative is considered as an interim solution to be used only for a period of time not exceeding one year from availability of the initial Number Portability software release based on the requirements of this document. It is expected that all LNP capable switches will be fully compliant with REQ-1125 in the first switch software "release" or "generic" available following the 2Q97 implementation date for Service Provider Portability.

An originating switch shall append an LNP module to all IC and INC exchange originating access AMA records generated by the switch. The LNP module shall be populated with the LRN of the originating switch. If more than one LRN is assigned to the originating switch, the "master LRN" assigned to the switch shall be recorded. (The "master LRN" is the LRN which the originating switch signals in the ISUP JIP on outgoing SS7 calls.) Additionally, the LNP module shall contain a Party Identifier set to "Originating party data", an LRN Source Indicator of the Supporting Information field set to "Switch data", and a Query Status Indicator of the Supporting Information field set to "no query done".

This includes IC or INC exchange originating access AMA records generated following either switch based supplementary service feature interaction or the processing of any AIN trigger at the originating switch.

<END of REQ-1125B>

<FUT-IL-GR-1127V1.02>

An originating switch shall be capable of recording in an LNP module attached to an IC or INC originating exchange access record a distinct LRN for ported DNs served by a Remote Switching Unit. The switch shall be capable of recording a distinct LRN for each Remote Switching Unit it serves.

This includes IC or INC exchange originating access AMA records generated following processing of any AIN trigger at the originating switch.

Recording a distinct LRN in a module attached to an IC or INC originating exchange access AMA record will continue to allow a different "wire-center" to be identified on an NPA-NXX basis for Remote Switching Units which serve as Community Dial Office (CDO) replacements.

<END of FUT-1127>

<FUT-IL-GR-1130V1>

For an originating number, if Service Provider Identity is specified for the originating DN on the switch, the LNP module containing the Service Provider Identity of the originating party shall be appended to any AMA record made for the originating subscriber. The LNP module shall be populated with the Service Provider Identity of the originating number and the LRN associated with the originating number.

Initially a single LRN is expected to be associated with all DNs on the switch to which that LRN applies. In the future, different LRNs may be associated with different DNs on the same switch. The same LRN will be recorded in the LNP module for this case as would be signaled in the JIP for call originations from the DN.

<End of FUT-1130>

<FUT-IL-GR-1140V1>

For an intra-switch call, if Service Provider Identity is specified for the terminating DN on the switch, the LNP module containing the Service Provider Identity of the terminating party shall be appended to the AMA record made for the call to the terminating subscriber. The LNP module shall be populated with the Service Provider Identity of the terminating number and the LRN associated with the terminating number.

Initially a single LRN is expected to be associated with all DNs on the switch to which that LRN applies. In the future, different LRNs may be associated with different DNs on the same switch. The same LRN will be recorded in the LNP module for this case as would be signaled in the JIP for call originations from the DN.

<End of FUT-1140>

4.5.4.2.1.2 Appending the LNP Module at a Donor Switch

The following requirements cover the general rules for appending the LNP module at a Donor switch.

<REQ-IL-GR-1150V1>

When a LNP query is made at the donor switch, if the switch records a terminating access record for calls from another network, the LNP module containing the LNP-database-supplied number portability information for the terminating party shall be appended to the terminating access record. If more than one switch AMA record is made at the donor switch for the call, the LNP module shall only be appended to the terminating access record.

Terminating access records are commonly generated for Feature Group "B", Feature Group "D", Cellular Type 2B, or "Connecting Network" access (e.g. CC119, CC135, CC66, or CC720).

<End of REQ-1150>

4.5.4.2.1.3 Appending the LNP Module at an Intermediate Switch

The following requirements cover the rules for appending the LNP module at an intermediate switch, including at an intermediate switch in an N-1 network. Three optional requirements are provided specifically for intermediate switches that perform Centralized Automatic Message Accounting (CAMA) for incoming calls (referred to as a CAMA switch).

<REQ-IL-GR-1160V1>

When a LNP query is made at an intermediate switch, if the switch records a terminating access record for calls from another network, the LNP module containing the LNP-database-supplied number portability information for the terminating party shall be appended to the terminating access record. If more than one switch AMA record is made at the intermediate switch for the call, the LNP module shall only be appended to the terminating access record.

Terminating access records are commonly generated for Feature Group "B", Feature Group "D", Cellular Type 2A, or "Connecting Network" access (e.g. CC119, CC135, CC64, or CC720).

<End of REQ-1160>

<OPT-IL-GR-1170V1>

When a LNP query is made at a CAMA switch, if the switch records a originating AMA Structure Code for the call, the LNP module containing the LNP-database-supplied number portability information for the terminating DN shall be appended to the AMA record.

Initially, the number portability information will be the LRN of the ported party, but in the future may also include Service Provider Identity.

<End of OPT-1170>

<OPT-IL-GR-1180V1>

For a given call, a CAMA switch shall be capable of appending up to two LNP modules to an originating AMA Structure Code; one LNP module for an originating DN, and the other for a terminating ported DN. The number portability information for the originating DN may be obtained from SS7 ISUP signaling (i.e. JIP), from data provisioned on the incoming CAMA trunk group (i.e. per-trunk group "LRN"), or from a response message from an LNP SCP database. The number portability information for a ported terminating DN will only be available when a LNP query is performed at the CAMA switch.

<End of OPT-1180>

<OPT-IL-GR-1190V1>

When number portability information for an originating party can not be obtained from either incoming SS7 ISUP signaling or from switch data, then the CAMA switch should be capable of querying the LNP SCP database to obtain this information to be recorded in the LNP AMA module.

If this optional capability to query for the number portability information of a ported originating DN is not available on the CAMA switch, then the CAMA switch owner will need to employ "off-line" means to determine the correct service provider of a ported DN.

<End of OPT-1190>

<REQ-IL-GR-1195V1.01>

When a switch serving as an access tandem receives a call from an IC or INC with a FCI parameter indicating "Translated number" and a "ported number GAP" in the SS7 ISUP IAM; the access tandem switch shall append a terminating LNP module to the IC or INC terminating exchange access AMA record, if any, generated by the access tandem switch for the call.

The LNP module shall be populated with the LRN of the terminating switch received in the Called Party Number (CdPN) parameter of the SS7 ISUP IAM. Additionally, the LNP module shall include a Party Identifier set to "Terminating party data", a LRN Source Indicator in the Supporting Information field set to "Incoming signaling", and a Query Status Indicator in the Supporting Information field set to "No query done".

If the access tandem switch receives a FCI parameter in the SS7 ISUP IAM indicating a "Translated number" for the call, but the IAM does not contain a "ported number GAP", the access tandem switch shall not generate an LNP module.

If the access tandem switch does not receive a FCI parameter indicating a "Translated number" in the SS7 ISUP IAM for the call, then the switch shall follow the procedures defined in this document to determine whether or not to perform an LNP query and generate an LNP BAF AMA module for that LNP query.

Note: If a call to a ported DN is received at an access tandem "un-dipped", and if the access tandem does not perform an LNP query for the call, the IC or INC terminating exchange access AMA record generated by the tandem can not provide adequate information to identify the actual terminating "wire-center".
<END of REQ-1195>

<REQ-IL-GR-1196V1.02>

When a switch serving as an access tandem or intermediate switch generates an IC or INC exchange originating access AMA record for a call on which neither switch based supplementary services nor AIN feature interactions have modified the billing number at that switch, the switch shall append an LNP module to the access AMA record containing the LRN of the originating switch. The LRN of the originating switch may be obtained from either;

- the JIP in the received SS7 IAM
- or from a per-trunk group "LRN" provisioned on the incoming trunk group over which the call was received at the intermediate switch.

If the originating switch's LRN is not available from either source, the LNP module will not be recorded.

If recorded, the LNP module shall also contain a Party Identifier set to "Originating party data", an LRN Source Indicator of the Supporting Information field set to either "Incoming Signaling" (if JIP is used as the LRN source) or to "Switch data" (if a per-trunk group "LRN" is used), and a Query Status Indicator of the Supporting Information field set to "no query done".

<End of REQ-1196>

<REQ-IL-GR-1196.5V1.03>

When a switch serving as an access tandem or intermediate switch generates an IC or INC exchange originating access AMA record following either a switch based supplementary service or an AIN feature interaction which initiates a separately billed call leg, the switch shall follow the procedures for originating exchanges for determining whether or not to append an LNP module to the IC or INC exchange originating access AMA record. (See REQ-1125 or REQ-1125B).

In the case of switch based supplementary services (e.g. call forwarding), the LNP module shall only be appended if the new billed party is a ported DN served by the forwarding exchange. In the case of AIN services initiating a separately billed call leg, the LNP module containing the LRN information of the intermediate exchange (the SSP) shall be appended to the access record.

<End -of-REQ-1196.5>

4.5.4.2.1.4 Appending the LNP Module at a Terminating Switch

<REQ-IL-GR-1197V1.01>

When a switch serving as a terminating office receives a call over a directly connected trunk from an IC or INC with a FCI parameter indicating that a "LNP query was done" and a "ported number GAP" in the SS7 ISUP IAM; the switch shall append a terminating LNP module to the IC or INC terminating exchange access AMA record, if any, generated by the terminating switch for the call.

The LNP module shall be populated with the LRN of the terminating switch received in the Called Party Number (CdPN) parameter of the SS7 ISUP IAM. Additionally, the LNP module shall include a Party Identifier set to "Terminating party data", a LRN Source Indicator in the Supporting Information field set to "Incoming signaling", and a Query Status Indicator in the Supporting Information field set to "No query done".

If the terminating switch receives a FCI parameter in the SS7 ISUP IAM indicating a "Translated number" for the call, but the IAM does not contain a "ported number GAP", the switch shall not generate an LNP module for the call.

Known IC or INC terminating exchange access AMA Call Codes are: CC039 Term. Integrated Multiple Access Switch Service, CC119 Terminating InterLATA, CC121 CSDC Terminating Access, CC132 Terminating FG-A, CC135 Terminating FG-B, and CC172 Terminating Private Virtual Network Call, Bellcore GR-1100-CORE, GR-1083-CORE, GR-1298-CORE, GR-1147-CORE, and GR-862-CORE should be consulted for a complete list of IC or INC exchange access AMA Call Codes.
<END of REQ-1197>

<REQ-IL-GR-1198V1.01>

When a switch serving as a terminating office receives a call over a directly connected trunk from an IXC and the call is received over either an MF trunk, or via SS7 without an FCI parameter indicating "Translated number", the terminating switch shall append a terminating LNP module to the IC or INC terminating exchange access AMA record generated by the switch, if any, when the call terminates to a ported DN. The LRN of the terminating switch shall be recorded in the LNP module. If more than one LRN is assigned to the terminating switch, the LRN which the switch signals in the ISUP JIP on outgoing SS7 calls shall be used. Additionally, the LNP module shall include a Party Identifier set to "Terminating party data", a LRN Source Indicator in the Supporting Information field set to "Switch data", and a Query Status Indicator in the Supporting Information field set to "No query done". If the call terminates to a non-ported DN, then the switch shall not generate an LNP module for the call.

Note: if the call is received at a donor exchange over a directly connected trunk from an IC or INC, and the called DN is not located on the donor exchange, the requirements of this document for determining whether to launch an LNP query and generate an LNP module for that query should be followed.

<END of REQ-1198>

<REQ-IL-GR-1198BV1.01>

The following is an alternative to the previous requirement REQ-1198. It is for consideration only if REQ-1198, which specifies generation of the LNP module only on calls terminating ported DNs, can not be provided in the 2Q97 time-frame. This alternative is considered as an interim solution to be used only for a period of time not exceeding one year from availability of the initial Number Portability software release based on the requirements of this document. It is expected that all LNP capable switches will be fully compliant with REQ-1198 in the first switch software "release" or "generic" available following the 2Q97 implementation date for Service Provider Portability.

When a terminating switch receives a call over a directly connected MF trunk, or via SS7 without an FCI parameter indicating "Translated number", the terminating switch shall append an LNP module to any IC or INC terminating exchange access AMA records generated by the switch. The LNP module shall be populated with the LRN of the terminating switch. If more than one LRN is assigned to the originating switch, the "master LRN" assigned to the switch shall be recorded. (The "master LRN" is the LRN which the originating switch signals in the ISUP JIP on outgoing SS7 calls.)

Additionally, the LNP module shall include a Party Identifier set to "Terminating party data", a LRN Source Indicator in the Supporting Information field set to "Switch data", and a Query Status Indicator in the Supporting Information field set to "No query done".

<END of REQ-1198B>

<FUT-IL-GR-1199V1.01>

A terminating switch shall be capable of recording in an LNP module attached to a IC or INC terminating exchange access record a distinct LRN for ported DNs served by a Remote Switching

Unit. The switch shall be capable of recording a distinct LRN for each Remote Switching Unit it serves.

Note: recording a distinct LRN in a module attached to an terminating access AMA record will continue to allow a different "wire-center" to be identified on an NPA-NXX basis for Remote Switching Units which serve as Community Dial Office (CDO) replacements.

<END of FUT-1199>

4.5.4.2.1.5 Appending the LNP Module at an IXC Switch

The following requirements cover the rules for appending the LNP module at an IXC switch.

<REQ-IL-GR-1200V1>

When a LNP query is made at an IXC switch, if the switch records an AMA Structure Code for the call, the LNP module containing the LNP-database-supplied number portability information for the terminating DN shall be appended to the AMA Structure Code.

IXC switches supporting Customer Detail Record (CDR) format are expected to provide equivalent recording of the LNP-database-supplied number portability information (e.g. LRN, Service Provider Identity, and location) in the appropriate format.

Initially, the number portability information will be the LRN of the ported party, but in the future may also include Service Provider Identity.

<End of REQ-1200>

<REQ-IL-GR-1210V1>

For a given call, an IXC switch shall be capable of appending up to two LNP modules to an existing AMA record; one LNP module for an originating DN, and the other for a terminating ported DN. The number portability information for the originating DN may be obtained from SS7 ISUP signaling (i.e. JIP), from data provisioned on the incoming trunk group (i.e. per-trunk group "LRN"), or from a response message from an LNP SCP database. The number portability information for a ported terminating DN will only be available when a LNP query is performed at the IXC switch.

When the LRN field of the LNP module records information received from incoming ISUP signaling (i.e. JIP), the last four (least significant) digits of the LRN field shall be filled with zeros.

IXC switches supporting Customer Detail Record (CDR) format are expected to provide equivalent recording of the LNP number portability information (e.g. LRN, Service Provider Identity, and location) in the appropriate format.

Note: the ability to query an LNP SCP database for information (e.g. LRN) of an originating ported DN is an optional requirement of this document.

<End of REQ-1210>

<OPT-IL-GR-1220V1>

When number portability information for an originating party can not be obtained from either incoming SS7 ISUP signaling or from switch data, then the IXC switch should be capable of querying the LNP SCP database to obtain this information to be recorded in the LNP AMA module or CDR.

If this optional capability to query for the number portability information of a ported originating DN is not available on the IXC switch, then the IXC switch owner will need to employ "off-line" means to determine the correct service provider to bill for calls from the ported DN.

<End of OPT-1220>

4.5.4.2.1.6 Rules for Appending the LNP Module for Feature Interactions

The following requirements cover the rules for appending the LNP module at a switch which generates an AMA record associated with a feature activation, assignment, or supplementary service. Such feature related AMA records may not be associated with an actual call.

<REQ-IL-GR-1230V1>

For Message Detail Recording to the Customer Premise, the LNP module data should not be present in MDR records sent to the customer premise.

Neither LRN nor Service Provider Identity will be included in MDR records sent to a CPE.

<End of REQ-1230>

<REQ-IL-GR-1240V1>

The LNP module shall be appended to existing SSP Toll Free (e.g. 800 or 888) AMA records (e.g. Call Code 0142 records), when an LNP query follows an SSP Toll Free query in the same SSP.

<End of REQ-1240>

<FUT-IL-GR-1250V1>

On a call that is originated from a DN for which Service Provider Identity (or other number portability information) is provisioned, the LNP module shall be appended to the AMA record for the initial call leg when the call encounters an AIN 0.1 Public Office Dialing Plan (PODP) trigger. The LNP module containing switch supplied data for the originating DN shall be appended to the AMA record, if any, for the initial call leg (i.e. call record for the call from originating party 'A' to the PODP trigger DN).

<End of FUT-1250>

<FUT-IL-GR-1260V1>

If a ported DN is assigned an AIN 0.1 Terminating Attempt Trigger (TAT), and an AIN AMA record of structure code 0221 is created by the switch for the call terminating attempt to the ported DN, then the LNP module shall be appended to the AIN AMA record. The LNP module shall be populated with switch supplied number portability information for the ported terminating DN.

<End of FUT-1260>

<REQ-IL-GR-1270V1>

When an LNP query is done following an unrelated AIN PODP trigger in the same SSP, then the LNP module shall be appended to the AMA record, if any, made for the post-AIN-query leg of the call (e.g. structure code 0220 record). If no AIN record is written for the post-AIN-query call leg, then the LNP module will not be generated.

<End of REQ-1270>

<REQ-IL-GR-1280V1>

When an LNP query is done following an unrelated AIN TAT trigger in the same SSP, then the LNP module shall be appended to the AMA record, if any, made for the post-AIN-query leg of the call (e.g. Structure Code 022x). If no AMA record is written for the post-AIN-query leg of the call, then the LNP module will not be generated.

<End of REQ-1280>

<REQ-IL-GR-1290V1>

When an LNP query is done following an unrelated AIN trigger other than a PODP or TAT (e.g. an OHD trigger) in the same SSP, then the LNP module shall be appended to the AMA record, if any, made for the post-AIN-query leg of the call.

For example, for a call which encounters an Off-Hook-Delay (OHD) trigger followed by an LNP trigger, because the called party number returned in the AIN response message for the OHD trigger is a ported DN, the LNP module would be appended to the AMA record, if any, made for the OHD query.

<End of REQ-1290>

<FUT-IL-GR-1300V1>

The LNP module shall be appended to all feature usage AMA records made by the switch for a DN when number portability information (e.g. Service Provider Identity) is provisioned in switch data for the DN.

Examples of feature usage records for which the LNP module should be appended are: CLASS feature activation, CLASS Screen List Editing aggregate usage, Call Forwarding activation, Usage-Sensitive Three-Way Calling activation, Conference Trunk usage, Terminating Subscriber Line Usage Study (TLUS), and Terminating ISDN supplementary services.

For non-call associated feature usage records it may not be possible for the switch to determine which LRN for the switch to associate with the DN for which the LNP module is recorded. LRN field fill procedures will be used for the LNP module in this case. Any other per-DN number portability information will be recorded in the LNP module without the LRN.

<End of FUT-1300>

4.5.4.3 Rules for Generating Connecting Network Access Record

<REQ-IL-GR-1310V1>

A Connecting Network Access AMA record shall be generated with Call Code 720, and using existing Structure Code 0625, when a call is received over an incoming trunk for which the "connecting network access recording option" is on.

The "connecting network access recording option" is defined in section 4.5.1.1- Switch Provisioning Modifications - LNP.

<End of REQ-1310>

<REQ-IL-GR-1315V1.05>

When a call is received over a trunk group with the "connecting network access recording" option on, and the incoming call results in an SSP Number Services or AIN Toll Free query (e.g. called 800/888 number) the Connecting Network Access record shall be generated in addition to any AMA records generated for the Toll Free query. The CNA record shall be generated as described in REQ-1310 with the terminating number field of the CNA record populated with the dialed Toll Free number (e.g. 800/888 number) received over the incoming trunk group. In this case if an LNP query is performed following an SSP Number Services or AIN Toll Free query, the resulting LNP module shall be appended to the Toll Free AMA record, as the Toll Free AMA record is the record applicable to the "pre-LNP query" call leg.

Note: this requirement applies ONLY to the case where the incoming trunk group is marked with the option for CNA recording for all calls. Refer to REQ-1320 for procedures involving "limited recording of connecting network access".

<END of REQ-1315>

<OPT-IL-GR-1320V1.0502>

When the call incoming to the switch is received over a trunk group with the "limited recording of connecting network access" option on, the Connecting Network Access record shall be generated as described in REQ-1310 only when the recording switch performs a LNP query for the incoming call, with the following two exceptions:

This "limited recording of connecting network access" option shall NOT apply when a switch performs an LNP query following call forwarding or other forms of call re-direction including re-direction via an AIN trigger (i.e. no CNA record should be generated when the called party number is changed via call forwarding, call re-direction, or AIN trigger prior to the switch performing an LNP query.)

The "limited recording of connecting network access" option shall NOT apply when a switch performs an AIN Toll Free or SSP Number Services (e.g. 800/888) query prior to performing the LNP query (note: in this case the LNP module will be appended to any AMA record made for the AIN or SSP query).

Carrier Connect Time for this "limited recording of connecting network access" shall be recorded as the time of incoming trunk seizure or receipt of an SS7 IAM in accordance with existing industry procedures for IC/INC Carrier Connect Time determination.

The "limited recording of connecting network access" option is defined in section 4.5.1 - Service Changes.
<End of OPT-1320>

<REQ-IL-GR-1330V1.02>

For the Connecting Network Access record (CC 720) structure code 0625 shall be populated as follows:

- a) Record Descriptor Word (reference LSSGR Table 000) - per existing rules.
- b) Hexadecimal Identifier (reference LSSGR Table 00) - per existing rules.
- c) Structure Code (reference LSSGR Table 0) - per existing rules
- d) Call Type (reference LSSGR Table 1) - Call Code 720.
- e) Connect Date (reference LSSGR Table 6) and Connect Time (reference LSSGR Table 18) - the date and time that the call is answered.
- f) Timing Indicator (reference LSSGR Table 7) - per existing rules.
- g) Study Indicator (reference LSSGR Table 8) - character 6 shall be set to indicate "no calling number" when neither ANI information nor trunk group "billing number" is available for the call. Otherwise, this indicator shall be populated per existing rules.
- h) Called Party Off-Hook Indicator (reference LSSGR Table 9) - per existing rules.
- i) Service Observed/Traffic Sampled (reference LSSGR Table 10) - per existing rules.
- j) Operator Action (reference LSSGR Table 11) - per existing rules.
- k) Service Feature (reference LSSGR Table 12) - per existing rules.
- l) Originating NPA & Originating Number (reference LSSGR Tables 13 & 14) - ANI of calling party, if received, or the "billing number" assigned to the incoming trunk group. If neither ANI nor trunk group "billing number" is available, this field shall be filled with zeros.
- m) Overseas Indicator, Terminating NPA & Terminating Number (reference LSSGR Tables 15, 16 & 17) - record the Dialed Number (not an LRN) per existing rules.
- n) Elapsed Time (reference LSSGR Table 19) - records the call duration, per existing rules.
- o) IC/INC Prefix (reference LSSGR Table 57) - record the carrier code assigned to the incoming trunk or trunk group. If none is assigned, then record the default value of '000' (i.e. unknown carrier) with character 5 set to a value of '9' to indicate that "CIC is unknown, IC/INC operator system involvement can not be determined".
- p) Carrier Connect Date and Carrier Connect Time (reference LSSGR Tables 6 & 18) - record the time that the incoming seizure signal is detected by the switch.
- q) IC/INC Call Event Status (reference LSSGR Table 58) - per existing rules (e.g., value '01' indicating incoming trunk seized).

- r) **Trunk Group Number** (reference LSSGR Table 83) - records the number of the incoming trunk and the Trunk Group Signaling Type indicator as shown in Table 6 below.
- s) **Routing Indicator** (reference LSSGR Table 59) - records a value of '1' "tandem" when the incoming trunk is from local tandem office, and a value of '0' "Direct" when the incoming trunk is from an end-office. When the origin of the incoming trunk can not be determined, a value of '1' "tandem" shall be recorded.
- t) **Dialing and Presubscription Indicator** (reference LSSGR Table 85) - records a value of '8' "no CAC dialed, station not presubscribed, no presubscription indication", since this field is not applicable for CNA records.
- u) **ANI/CgPN Indicator** (reference LSSGR Table 60) - records a value of '1' "ANI provided" if ANI is received and recorded in the Originating NPA and Originating Number fields, a value of '3' "ANI and CgPN provided" if both ANI and CgPN received and ANI is recorded in the Originating NPA and Originating Number fields; otherwise, records a value of '0' "neither ANI nor CgPN provided".

Table 6: CNA Record Trunk Group Signaling Type

Value	Existing BAF Definition	CNA Record Interpretation
1	Non-SS7 Direct Trunk Group	Non-SS7 Direct Trunk Group (recording switch is terminating EO)
2	Non-SS7 from IC to AT, Non-SS7 from AT to EO	Non-SS7 Incoming Trunk Group, Non-SS7 Outgoing Trunk Group (recording switch is Tandem)
3	SS7 Direct Trunk Group	SS7 Direct Trunk Group (recording switch is Terminating EO)
4	SS7 from IC to AT, SS7 from AT to EO	SS7 Incoming Trunk Group, SS7 Outgoing Trunk Group (recording switch is Tandem)
5	Non-SS7 from IC to AT, SS7 from AT to EO	Non-SS7 Incoming Trunk Group, SS7 Outgoing Trunk Group (recording switch is Tandem)
6	SS7 from IC to AT, Non-SS7 from AT to EO (terminating only)	SS7 Incoming Trunk Group, Non-SS7 Outgoing Trunk Group (recording switch is Tandem)
7	not used	not used
8	not used	not used
9	Signaling type not specified	Signaling Type not specified

<End of REQ-1330>

4.5.4.4 Rules for Populating Terminating Access Records

<REQ-IL-GR-1340V1>

When an switch receives an SS7 ISUP IAM with the Translated Called Number indicator in the FCI parameter indicating that an LNP query was performed by at a previous switch and containing the original Dialed DN in a GAP, and if a terminating access record (e.g. CC119, CC66, or CC720) is recorded by the switch, the GAP information should be used to populate the Terminating NPA and Terminating Number fields of the terminating access record. The LRN in the Called Party Number parameter should not be used in these fields.

<End of REQ-1340>

4.5.5 Administrative I/O Messages

<REQ-IL-GR-1345V1.01>

With respect to the AIN Test Query capability, craft can initiate an LNP query; however, the generated "Ported Number" GAP and FCI values need not be displayed following the test query. The test query for LNP triggers must route the query to the appropriate LNP database.

<End of REQ-1345>

The following tags identify additional maintenance output messages required to identify SCP database errors.

<REQ-IL-GR-1350V1.04>

The switch shall provide notification to service provider personnel for LNP calls when the switch detects it's own LRN but the call receives "unallocated number" treatment. The notification shall include, if available, the calling party, called party, JIP, and the LRN. The call shall be cleared using existing ISUP call procedures and will use ANSI cause 26 - "Misrouted call to a ported number".

<End of REQ-1350>

<OPT-IL-GR-1360V1.04>

The switch shall provide notification to service provider personnel for LNP calls when the switch receives a REL message with an ANSI cause value of 26 "Misrouted call to a ported number". The notification shall include, if available, the calling party, called party, JIP, and the LRN.

<End of OPT-1360>

4.6 Maintenance Requirements

A new test call mechanism is needed for calls to portable number to accomplish the following:

1. Allow the service provider of the recipient switch to direct a test call any other service provider's network by specifying the LRN for any switch.
2. The service provider receiving the test call would detect it's LRN and route the call as though the call had been received at the switch on an incoming trunk where the query had not been done.
3. The call would be redirected back to the recipient switch to connect to the subscriber.

Below are the requirements to support this test call. When a test call is initiated, the call will be routed based on the input LRN and routed to the donor switch that "owns" the LRN. The donor will detect its own LRN and recognized via the "ported number" GAP that this is a test call. The donor would replace the CdPN information with the contents of the GAP and process the call as though the GAP was not received and the FCI was not set. The donor would most likely encounter an LNP trigger and retrieve the correct LRN for the recipient switch. The call would then be routed to the recipient. Note -- the test indicator in the GAP reset at the donor switch exactly as normal LNP calls.

<OPT-IL-GR-1370V1>

The switch shall allow the LRN and the subscriber's number to be input on a test call. The input LRN shall be used to route the call to LRN's switch using the LNP routing tables. The IAM shall be formatted as though the LNP query had been launched and the input LRN was successfully returned. In addition to signaling the LRN in the CdPN and the subscriber's number in the "ported number" GAP, the switch shall set the test indicator in the "ported number" GAP to indicate that the call is a test LNP call.

<End of OPT-1370>

<OPT-IL-GR-1380V1>

The switch, once the it's own LRN is detected, shall determine if the "ported number" GAP specifies that the IAM is for test purposes. If so, the switch shall reset the Translated Called Number indicator in the FCI parameter to "number not translated" and analyze the address digits in the GAP using the number routing tables associated with the incoming trunk. The call proceeds as a non-test call using normal LNP processing.

When the GAP information is reanalyzed, the call may encounter an LNP trigger. If a trigger is encountered, LNP processing will occur as though LNP was not previously involved in the call.
<End of OPT-1380>

4.7 Initialization and Recovery Requirements

No new requirements have been identified.

4.8 Capacity, Performance and Reliability Requirements

No new requirements have been identified.

4.9 Subscriber Limitations and Restrictions

Except where noted in this GR, switch features function transparently on calls to/from ported and non-porting numbers from a subscriber's perspective.

APPENDIX A - LNP Module and Associated BAF Tables

Local Number Portability (LNP) Module (Module Code 720)

<i>Information</i>	<i>Table #</i>	<i>Number of Characters</i>
Module Code (AAA)	88	4 (BCD)
Party Identifier	730	4 (BCD)
Location Routing Number (LRN)	731	12 (BCD)
Service Provider Identity	732	10 (BCD)
Location	733	16 (BCD)
Supporting Information	734	8 (BCD)

This module is used to convey information pertinent to rating and billing of calls to and/or from ported numbers in environments with Local Number Portability (LNP).

Table 730 Party Identifier

<i>BCD Character</i>	<i>Meaning</i>
1-3	001 = Originating Party data
	002 = Terminating Party data
	003 = Billing Party data
	004 = Aggregate/Feature record DN data
	999 = Unknown
4	SIGN (Hex. "C")

This field identifies the directory number reference of the party with which this module is associated in the body of the accompanying Bellcore Format AMA structure.

- "001" indicates that the data included in the LNP module (Module Code 720) refers to the originating party.
- "002" indicates that the data included in the LNP module (Module Code 720) refers to the terminating party.
- "003" indicates that the data included in the LNP module (Module Code 720) refers to the billing party. This value would be used by an Operator Service System (OSS) that provides Alternate Billing Services. Value "003" is used if the OSS generates an LNP module for a "bill-to-third" or line-based calling card call.
- "004" indicates that the data included in the LNP module (Module Code 720) refers to the party associated with the directory number in an aggregate or feature billing record.
- "999" indicates that the AMA system does not know which of the preceding parties should be associated with the LNP module.

Table 731 Location Routing Number (LRN)

<i>BCD Character</i>	<i>Meaning</i>
1	0 (Constant)
2-11	Location Routing Number (NPA-NXX-XXXX)
12	SIGN (Hex. "C")

If used, this field identifies the switching entity that provides service to the party identified in the Party Identifier field (Table 730). The identity is a Location Routing Number (LRN). It is identified in terms of BCD representation of a 10-digit decimal LRN whose source is indicated in the LRN Source Indicator of the Supporting Information field (Table 734).

Some LRN sources may provide the LRN in terms of an NPA-NXX sextet followed by a 4-digit pseudo-line number. Other sources may provide the LRN in terms of an NPA-NXX sextet only. In this case, the four (4) right-most (e.g. least significant) digits (a.k.a. the line number digits) of the LRN in this table are zero (0) filled. The LRN Source Indicator of the Supporting Information field (Table 734) may be used to distinguish between these cases.

If an LRN is not available due to an error encountered in querying an LNP database, each of the 12 character positions shall be populated with Hex.-F, and the appropriate Query Status Indicator shall be set in the Supporting Information field (Table 734).

If this field is not used, or is not applicable, each of the 12 character positions shall be populated with Hex.-F.

Table 732 Service Provider Identity

<i>BCD Character</i>	<i>Meaning</i>
1	0 (Constant)
2-9	Service Provider Identity
10	SIGN (Hex. "C")

If used, this field identifies the entity that provides service to the party identified in the Party Identifier field (Table 730). A service provider is identified in terms of the BCD representation of an 8-digit number.

If this field is not used or is not applicable, each of the 10 character positions shall be populated with Hex.-F.

In the future, information supporting the use of this field may be provided in one or more of the character positions in the Supporting Information field (Table 734) that are currently reserved for future use.

Table 733 Location

<i>BCD Character</i>	<i>Meaning</i>	
1-3	Location Type	001 = V&H Coordinates 002 = 5 digit U.S. Zip Code 003 = 9 digit U.S. Zip Code 004 = Canadian Post Code 005 = Longitude & Latitude 999 = Unknown
4-15	Location	
16	SIGN (Hex. "C")	

If used, this field identifies a location in terms of the BCD representation of a 12-digit number. The location's type (e.g. V&H coordinates or Zip Code) is indicated in characters 1-3. The actual location is populated in characters 4-15. Population rules for each location type are specified below.

If the location type is "001", the location is given by V&H coordinates. In this case, the 12-digit Location (character positions 4-15) is populated as two 6-digit fields, one for the V coordinate and one for the H coordinate. The V coordinate is right-justified in positions 4-9, and any unused or insignificant digits are padded with zero (0). The H coordinate is right-justified in positions 10-15, and any unused or insignificant digits are padded with zero (0).

If the location type is "002", the location is given by a 5-digit U.S. Zip Code. It is populated in positions 11-15. Positions 4-10 are padded with zero (0).

If the location type is "003", the location is given by a 9-digit U.S. Zip Code. It is populated in positions 7-15. Positions 4-6 are padded with zero (0).

If the location type is "004", the location represents a 6-character Canadian Postal Code. Canadian Postal Codes have the format ANA NAN, where A is an alphabetic character, and N is a decimal digit. Since this field only captures digits, the alphas in a Canadian Postal Code must be represented by decimal codes. The blank is ignored. The coding scheme adopted is the same used in the "Planet Code" scheme informally agreed to by the U.S. and Canadian postal services. In this scheme, the 9 sequential letters A through I are represented by sequential numerical values from 11 to 19, the letters J through R are represented by the numbers 21 through 29, and the letters S through Z are represented by the numbers 31 through 38. In this manner, the 6-character Canadian Postal Code is represented by a 9-digit number in which digits 1-2, 4-5, and 7-8 are coded letters, and digits 3, 6, and 9 are uncoded digits.

The coded 6-character Canadian Postal Code is populated in positions 7-15. Positions 4-6 are padded with zero (0).

As an example of how a 6-character Canadian Postal Code is represented for this field, consider the code K1J 8J1. It would be represented as the 9-digit number 221218211. In this number, digits 1-2 (22), 4-5 (21), and 7-8 (21) code the letters K, J, and J of the example. Observe that the blank has been ignored. The 15 data characters of the Location field would be populated with the BCD representation of 004000221218211. The sign character of the field would be populated with Hex.-C.

If the location type is "005", the location is given by north geographic latitude and west geographic longitude. In this case, the 12-digit Location is populated as two 6-digit fields, one for the north latitude coordinate and one for the west longitude coordinate. The latitude and longitude coordinates are each expressed as 6-digit numbers consisting of three places for degrees, two places for minutes, and one place for tenths-of-minutes. The 12-digit Location is populated as follows for location type "005":

- Characters 4-6 indicate the degrees portion of the north latitude coordinate (right-justified with any insignificant positions padded with zero (0))
- Characters 7-8 indicate the minutes portion of the north latitude coordinate (right-justified with any insignificant positions padded with zero (0))
- Character 9 indicates the tenths-of-minutes portion of the north latitude coordinate
- Characters 10-12 indicate the degrees portion of the west longitude coordinate (right-justified with any insignificant positions padded with zero (0))
- Characters 13-14 indicate the minutes portion of the west longitude coordinate (right-justified with any insignificant positions padded with zero (0))
- Character 15 indicates the tenths-of-minutes portion of the west longitude coordinate

If the location type is "999", the location type is unknown.

If this field is not used or is not applicable, each of the 16 character positions shall be populated with Hex.-F.

In the future, information supporting the use of this field may be provided in one or more of the currently reserved characters in the Supporting Information field (Table 734).

Table 734 Supporting Information

<i>BCD Character</i>	<i>Meaning</i>
1	LRN Source Indicator 1 = LNP Database 2 = Switching system data 3 = Incoming Signaling 9 = Unknown
2-3	Query Status Indicator 01 = No query failure 02 = No query response message received 03 = AIN Continue or Authorize_Termination message received as response 04 = Protocol Error in received response message 05 = Error detected in response data 06 = Query rejected 09 = No query performed 99 = Query unsuccessful, reason unknown
4	Reserved for Future use (Constant = 0)
5	Reserved for Future use (Constant = 0)
6	Reserved for Future use (Constant = 0)
7	Reserved for LNP Service Provider use (Constant = 0)
8	SIGN (Hex. "C")

This field is used in the Local Number Portability (LNP) module (Module Code 720) to provide information in support of interpreting and parsing the Location Routing Number (LRN) field (Table 731).

The supporting information is provided in characters 1-5 as follows:

- Character 1 identifies the source of the LRN populated in the LRN field (Table 731). Value "1" indicates that the LRN was obtained from an LNP database. Value "2" indicates that the LRN was obtained from switching system data. Value "3" indicates that the LRN was obtained from an incoming signaling message. In this case, the four (4) right-most (e.g. least significant) digits (a.k.a. line number digits) of the LRN in the Location Routing Number field (Table 731) are zero (0) filled by the AMA system. Value "9" indicates that the LRN's source is not known.
- Characters 2-3 identify the result of the status of the query that produced the LRN that is populated in the Location Routing Number field (Table 731). Value "01" indicates a successful query. Values "02" through "06" indicate an unsuccessful query and give the specific reason why the query was not successful. Value "09" indicates that no LNP query was performed to get the data in the LRN field (Table 731). Value "99" indicates that the query was unsuccessful, but that the reason is not known.
- Characters 4-6 are reserved for future use. Value "0" is the default value recorded for reserved characters 4-6.
- Character 7 is reserved for use by LNP service providers. It is not administered by Bellcore, except for the stipulation that value "0" is the default value recorded if the character is not used.

Attachment 3

Redacted

End User Surcharge Only

[illegible][illegible]

Attachment 4

Redacted

The following costs for land, building, administrative and maintenance were included in Transmittal Nos. 965 and 975.

Query Type	Categories			
	Land	Building	Administration	Maintenance
Default End Office LNP Query				
Capital Costs	\$ 4,869 (\$ 0.000030 per query)	\$ 123,187 (\$ 0.000759 per query)	\$ 0	\$ 0
Operating Expense	\$ 0	\$ 0	\$ 111,988 (\$ 0.000690 per query)	\$46,094 (\$ 0.000284 per query)
Expense Not Related to Investment	\$ 0	\$ 0	\$ 17,853 (\$ 0.000110 per query)	\$ 0
LNP Database Query				
Capital Costs	\$ 3,088 (\$ 0.0000026 per query)	\$78,383 (\$ 0.000066 per query)	\$ 0	\$ 0
Operating Expense	\$ 0	\$ 0	\$ 90,259 (\$ 0.000076 per query)	\$ 30,878 (\$ 0.000026 per query)
Expense Not Related to Investment	\$ 0	\$ 0	\$ 118,762 (\$ 0.0001 per query)	\$ 0
Default Tandem LNP Query				
Capital Costs	\$ 14,066 (\$ 0.000026 per query)	\$358,687 (\$ 0.000663 per query)	\$ 0	\$ 0
Operating Expense	\$ 0	\$ 0	\$ 325,144 (\$ 0.000601 per query)	\$ 132,005 (\$ 0.000244 per query)
Expense Not Related to Investment	\$ 0	\$ 0	\$59,511 (\$ 0.000110 per query)	\$ 0

The query costs as re-calculated at the Commission staff's request include the following costs for land, building, administrative, and maintenance. The maintenance included here is for vendors providing maintenance for USWC's SCPs as reflected in items 70a and 70b in Confidential Workpaper 5.

Query Type	Categories			
	Land	Building	Administration	Maintenance
Default End Office LNP Query				
Capital Costs	\$ 0	\$ 0	\$ 0	\$ 0
Operating Expense	\$ 0	\$ 0	\$ 0	\$ 0
Expense Not Related to Investment	\$ 0	\$ 0	\$ 0	\$ - (\$ - per query)
LNP Database Query				
Capital Costs	\$ 0	\$ 0	\$ 0	\$ 0
Operating Expense	\$ 0	\$ 0	\$ 0	\$ 0
Expense Not Related to Investment	\$ 0	\$ 0	\$ 0	\$ - (\$ - per query)
Default Tandem LNP Query				
Capital Costs	\$ 0	\$ 0	\$ 0	\$ 0
Operating Expense	\$ 0	\$ 0	\$ 0	\$ 0
Expense Not Related to Investment	\$ 0	\$ 0	\$ 0	\$ - (\$ - per query)